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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,245	06/26/2003	Hiroshi Nishikawa	P23521	4244

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RESTON, VA 20191

EXAMINER

DANIELSEN, NATHAN ANDREW

ART UNIT	PAPER NUMBER
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2627

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	02/06/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No. 10/606,245	Applicant(s) NISHIKAWA, HIROSHI	
	Examiner Nathan Danielsen	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-16 are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Velzel et al (US Patent 4,850,673; hereinafter Velzel).

Regarding claims 1 and 9, Velzel discloses an optical head, comprising:

a light emitting device that emits a light beam (element 6 in figure 1);

a deflector that deflects the light beam emitted by the light emitting device toward an optical disc (element 8);

an objective lens that converges the light beam emerged from the deflector onto the optical disc (element 10); and

an error signal detecting system that generates a servo signal for servo control based on the light beam reflected by the optical disc (figures 4-6),

wherein said deflector includes a prism having a first surface (surface 8A in figure 1 as shown below) into which the light beam from said light emitting device enters, a second surface (surface 8B in figure 1 below) from which the light beam proceeding toward said objective lens emerges, and a third surface (surface 8C in figure 1 below) from which the light beam reflected by the optical disc emerges, the light beam emerged from the third surface proceeding toward said error signal detecting system (figure 1).

Further regarding claim 1, Velzel discloses where said prism satisfies a condition:

$$\theta_1 = -\theta_2$$

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where θ_1 represents an angle which the second surface forms with respect to the first surface,

and θ_2 represents an angle which the third surface forms with respect to the first surface,

polarity of each of the angles θ_1 and θ_2 being defined depending on whether the each of

the angles θ_1 and θ_2 has counterclockwise direction or has clockwise direction (figure 1).

Further regarding claim 9, Velzel discloses where said prism satisfies a condition:

$$-\pi/1080 \text{ radian} \leq \alpha_1 + \beta_1 \leq \pi/1080 \text{ radian}$$

where α_1 represents an emergence angle which the light beam emerging from the second

surface and proceeding toward said objective lens forms with respect to a normal to the

second surface, β_1 represents an emergence angle which the light beam emerging from

the third surface and proceeding toward said error signal detecting system forms with

respect to a normal to the third surface, polarity of each of the angles α_1 and β_1 being

defined depending on whether the each of the angles α_1 and β_1 has counterclockwise

direction or has clockwise direction (figure 1).

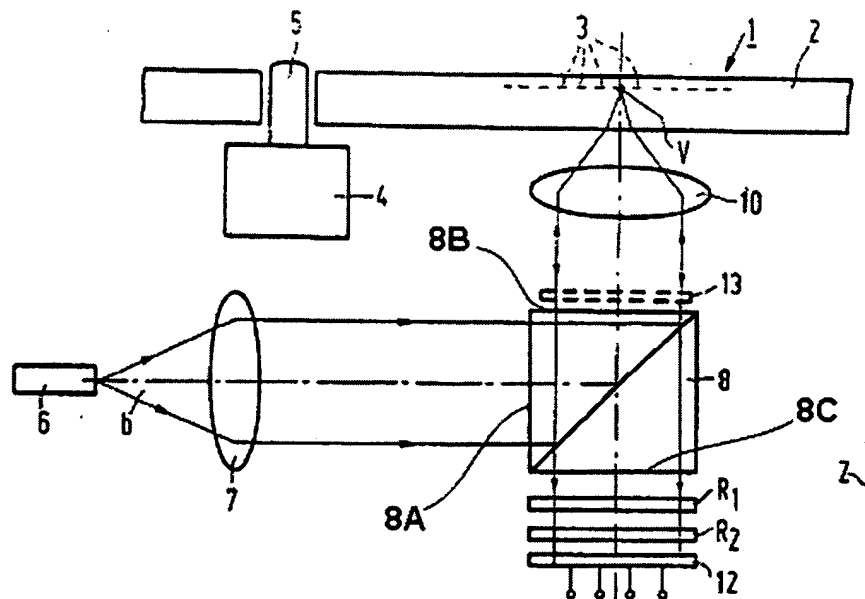


FIG. 1

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4. Claims 1, 7-9, 15, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ando (US Patent Application Publication 2001/0048553).

Regarding claims 1 and 9, Ando discloses an optical head, comprising:

a light emitting device that emits a light beam (§§s 144-153);

a deflector that deflects the light beam emitted by the light emitting device toward an optical disc (§§s 144-153 and figure 6);

an objective lens that converges the light beam emerged from the deflector onto the optical disc (§§s 144-153); and

an error signal detecting system that generates a servo signal for servo control based on the light beam reflected by the optical disc (§§ 121),

wherein said deflector includes a prism having a first surface (surface 133b in figure 6) into which the light beam from said light emitting device enters, a second surface (surface 133a) from which the light beam proceeding toward said objective lens emerges, and a third surface (surface 133c) from which the light beam reflected by the optical disc emerges, the light beam emerged from the third surface proceeding toward said error signal detecting system (figures 3 and 6).

Further regarding claim 1, Ando discloses where said prism satisfies a condition:

$$\theta_1 = -\theta_2$$

where θ_1 represents an angle which the second surface forms with respect to the first surface, and θ_2 represents an angle which the third surface forms with respect to the first surface, polarity of each of the angles θ_1 and θ_2 being defined depending on whether the each of the angles θ_1 and θ_2 has counterclockwise direction or has clockwise direction (figure 6).

Further regarding claim 9, Ando discloses where said prism satisfies a condition:

$$-\pi/1080 \text{ radian} \leq \alpha_1 + \beta_1 \leq \pi/1080 \text{ radian}$$

where α_1 represents an emergence angle which the light beam emerging from the second surface and proceeding toward said objective lens forms with respect to a normal to the second surface, β_1 represents an emergence angle which the light beam emerging from

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the third surface and proceeding toward said error signal detecting system forms with respect to a normal to the third surface, polarity of each of the angles α_1 and β_1 being defined depending on whether the each of the angles α_1 and β_1 has counterclockwise direction or has clockwise direction (figure 6).

Regarding claims 7 and 15, Ando discloses everything claimed, as applied to claims 1 and 9. Additionally, Ando discloses where the first surface is formed as a beam splitting surface (§§s 144-153 and figure 6).

Regarding claims 8 and 16, Ando discloses everything claimed, as applied to claims 1 and 9. Additionally, Ando discloses where the first surface is formed as a half mirror surface (§§s 144-153 and figure 6).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-6 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Velzel, in view of Kubo (US Patent 5,684,762).

Regarding claims 2-6 and 10-14, Velzel discloses everything claimed, as applied to claims 1 and 9, respectively. However, Velzel fails to disclose the specific details of the error signal detecting system as claimed.

In the same field of endeavor, Kubo discloses where said error signal detecting system includes: a beam splitting system which divides the light beam reflected by the optical disc into a plurality of beams including a pair of beams for generating the servo signal and causes the pair of beams to defocus, with respect to a predetermined focal plane, in positive and negative directions, respectively (figures 1 and 2 and);

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a pair of sensors for the servo signal, the pair of beams divided by the beam splitting system impinging on the pair of sensors, respectively (figures 2 and 7); and
a signal processing unit that generates the servo signal based on outputs of the pair of sensors (figure 7),
wherein the servo signal generated by the pair of sensors includes a focus error signal in accordance with Spot Size method and a tracking error signal in accordance with Push-Pull method (col. 1, lines 10-26, col. 7, lines 25-39, and figure 7), and
wherein the plurality of beams divided by the beam splitting system includes a beam for a data signal (col. 7, lines 53-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the error signal detecting system of Velzel with that of Kubo, for the purpose of utilizing a simple optical system and simple electric or electronic circuits including a signal processing circuit, where the arrangement of the light receiving elements is simplified and no interference between the servo-signal and the data signal occurs, to reproduce data from a magneto-optic recording medium (col. 1, lines 46-52).

Regarding claims 7 and 15, Velzel discloses everything claimed, as applied to claims 1 and 9, respectively. Additionally, Velzel discloses where optical head according to claim 1, wherein the first surface is formed as a beam splitting surface (col. 4, lines 55-66).

Regarding claims 8 and 16, Velzel discloses everything claimed, as applied to claims 1 and 9, respectively. Additionally, Velzel discloses where optical head according to claim 1, wherein the first surface is formed as a half mirror surface (col. 4, lines 55-66).

7. Alternatively, claims 1, 7-9, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (US Patent 5,581,403; hereinafter Kobayashi).

Regarding claims 1 and 9, Kobayashi discloses an optical head, comprising:
a light emitting device that emits a light beam (element 21 in figure 1);

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a deflector that deflects the light beam emitted by the light emitting device toward an optical disc (element 24);

an objective lens that converges the light beam emerged from the deflector onto the optical disc (element 26); and

an error signal detecting system that generates a servo signal for servo control based on the light beam reflected by the optical disc (element 28),

wherein said deflector includes a prism having a first surface (surface 24a) into which the light beam from said light emitting device enters, a second surface (surface 24b) from which the light beam proceeding toward said objective lens emerges, and a third surface (surface 24c) from which the light beam reflected by the optical disc emerges, the light beam emerged from the third surface proceeding toward said error signal detecting system (figure 1).

However, Kobayashi is silent as to where said prism satisfies the conditions:

in claim 1, $\theta_1 = -\theta_2$; and

in claim 9, $-\pi/1080 \text{ radian} < \alpha_1 + \beta_1 < \pi/1080 \text{ radian}$.

The examiner maintains that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (See MPEP § 2144.05(II)(A)). Therefore, since Kobayashi discloses a prism in the same general configuration as that above, since it would be obvious to arrange the selected optical elements in optical head such that the optical head functions and since it would be obvious to select certain substances due to their refractive properties to accomplish a specific task, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have performed routine experimentation in order to discover exactly what shape, in combination with the selected material, to make the prism such that the abovementioned conditions were met.

Regarding claims 7 and 15, Kobayashi discloses everything claimed, as applied to claims 1 and 9. Additionally, Kobayashi discloses where the first surface is formed as a beam splitting surface (figure 1).

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Regarding claims 8 and 16, Kobayashi discloses everything claimed, as applied to claims 1 and 9. Additionally, Kobayashi discloses where the first surface is formed as a half mirror surface (figure 1).

Response to Arguments

8. Applicant's arguments with respect to claims 1 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Closing Remarks/Comments

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Danielsen whose telephone number is (571) 272-4248. The examiner can normally be reached on Monday-Friday, 9:00 AM - 5:00 PM Eastern Time.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571) 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nathan Daniels
02/01/2007

ND


THANG V. TRAN
PRIMARY EXAMINER